To:

Customer P/N:

UDE P/N : RUP-ZZ-0158

Description : RJ45 Tab up over USB3.1 Gen1 stack
Through Hole
10G Base-T
Contact Area : 30μ" Min. Gold
LED : L-Green; R-Green/Yellow

Spec No. | Update Date | Revision
---------|-------------|---------
RUP18121-00 | 2018/10/9 | B

<table>
<thead>
<tr>
<th>Approved</th>
<th>Checked</th>
<th>Prepared</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RoHS

UDE Corp.
No.13, Ln. 68, Neixi Rd., Luzhu Dist., Taoyuan City (33852), Taiwan
TEL: 886-3-3242000 FAX: 886-3-3246611
http://www.ude-corp.com/
<table>
<thead>
<tr>
<th>Issue Date</th>
<th>Revision</th>
<th>Comments</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018/10/8</td>
<td>A</td>
<td>Initial Release</td>
<td>Jcl</td>
</tr>
<tr>
<td>2018/10/9</td>
<td>B</td>
<td>Update Schematic</td>
<td>Qsy</td>
</tr>
</tbody>
</table>
1. MECHANICAL DIMENSION

Product Dimension

<table>
<thead>
<tr>
<th>Unit:mm</th>
<th>General Tolerance:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X.X : ± 0.38</td>
</tr>
<tr>
<td></td>
<td>X.XX : ± 0.20</td>
</tr>
</tbody>
</table>

Bottom View

Left LED

Right LED

12.63 ± 0.25
0.45 ± 0.08 USB
0.50 ± 0.08 LED

0.2~0.6
After Pre-Soldering

12.7~14.2
15.80 ± 0.50
18.55 ± 0.38

(16.0)

0.50 ± 0.08 RJ

Back View

0.35 ± 0.05 LED
0.35 ± 0.05 RJ

2.00 ± 0.13
1.70 ± 0.13
13.34

Pre-Soldering

DETAIL A

U. D. Electronic Corp.
Recommended PCB Layout. Component side of board
All dimension units are "mm".
All dimension tolerances are ±0.05mm unless otherwise specified.

Table 1

<table>
<thead>
<tr>
<th>Layer</th>
<th>Trace</th>
<th>Component</th>
<th>Grounding</th>
<th>Test Point</th>
<th>Via Hole</th>
<th>PTH</th>
<th>NPTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component side</td>
<td>X</td>
<td>X</td>
<td>O</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>Inner layer</td>
<td>O</td>
<td>NA</td>
<td>O</td>
<td>NA</td>
<td>O</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>Bottom side</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>X</td>
<td>O</td>
</tr>
</tbody>
</table>

X--Forbid; O--OK; NA--Not Applicable.
2. Packing Information

40 pcs finished goods per tray
5 trays (200 pcs finished goods) per inner box
4 Inner boxes (800 pcs finished goods) per master carton

- All dimensions follow:
  - FCC subpart F, 68,500, Figure (C)(2)(i) & (C)(2)(ii) & (C)(3)(i)
  - IEC 60603-7

- All plugs must be meeting the requirements of plug Go & No-Go gauge.
  - Gauge follow: FCC subpart F, 68,500, Figure (C)(4)(i) & (C)(5)(i)

- There must be no damage to Housing and Locking Latch.
- There must be no nicks and cuts in cable.
- Durability: 750 cycles generally

The plug contact and the front plastic of the plug should prevent jack contacts from being damaged during plug insertion into jacks.
4. USB 3.1 Standard-A Plug Specification

- All dimensions follow: Universal Serial Bus 3.0 Specification, Revision 1.0.

Figure 5-2. USB 3.0 Standard Plug-A interface dimensions

- Non-dimensions geometry for reference only, subject to change.
- Drawing for mating interface dimensions only.
5. REQUIREMENTS

Design and Construction
Product shall be of design, construction and physical dimensions specified on applicable.

Material

Terminal Parts (Underplating: 50μ" min. Nickel overall)
- RJ Terminal: Phosphor Bronze, Thickness=0.30mm
- Finish: Contact Area: 30μ" min. Gold
- Solder Tail: 100μ" min. Bright Tin
- USB 2.0 Terminal: Phosphor Bronze, Thickness=0.25mm
- Finish: Contact Area: 30μ" min. Gold
- Solder Tail: 100μ" min. Matte Tin
- USB 3.1 Gen1 Terminal: Brass, Thickness=0.25mm
- Finish: Contact Area: 30μ" min. Gold
- Solder Tail: 100μ" min. Matte Tin
- Input Terminal: Brass, Thickness=0.35mm
- Finish: 100μ" min. Matte Tin
- Case Terminal: CP Wire, Diameter=0.40mm
- Finish: 100μ" min. Bright Tin
- LED Terminal: Brass, Thickness=0.35mm
- Finish: 100μ" min. Matte Tin

Plastic Parts <UL94V-0>
- RJ Housing: PBT, Black
- Spacer: PBT, Black
- Case: PF2A5-151J, Black
- USB Housing: PA9T, Blue(300C)
- USB Back Cover: PA9T, Blue(300C)

Shield Parts
- Front Shield: Stainless Steel, Thickness=0.25mm, unplating
- Back Shield: Stainless Steel, Thickness=0.20mm, Pre-soldering
6. Operating and Storage Temperature
   Operating Temperature: 0°C to +70°C
   Storage Temperature: -40°C to +85°C

7. RJ45 specifications
   Insulation Resistance: 500MΩ min.
   Insertion force with the latch depressed: 20N max.
   Removal force with the latch depressed: 20N max.
   Locking Force of Plug Latch: 50N min. @ 60+/-5 sec.
   Durability: 2500 cycles

8. USB 3.1 Gen1 specifications
   Insulation Resistance: 100MΩ min.
   Dielectric Withstanding Voltage: 100VAC @1min
   Insertion force: 35N max
   Removal force: The connector extraction force shall not be less than 10N initial
   and 8N after the specified insertion/extraction or durability cycles
   Durability: 1500 cycles

9. Performance and Test Description
   Product is designed to meet electrical, mechanical and environmental
   performance requirements specified in below table.
   All tests are performed at ambient environmental conditions per MIL-STD-1344A
   and EIA-364 unless otherwise specified.

10. Packaging and Packing
    All parts shall be packaged and packed to protect against physical damage, corrosion
    and deterioration during shipment and storage.
11. USB 3.1 GEN 1 Standard-A Schematic

### PHY Side

- **VBUS U1(U10)** — U1(U10) VBUS
- **D- U2(U11)** — U2(U11) D-
- **D+ U3(U12)** — U3(U12) D+
- **GND U4(U13)** — U4(U13) GND
- **RX- U5(U14)** — U5(U14) RX-
- **RX+ U6(U15)** — U6(U15) RX+
- **GND U7(U16)** — U7(U16) GND
- **TX- U8(U17)** — U8(U17) TX-
- **TX+ U9(U18)** — U9(U18) TX+

### USB 3.1 GEN 1 Standard-A connector Pin Assignment

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Signal Name</th>
<th>Description</th>
<th>Mating Sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>U1&amp;U10</td>
<td>VBUS</td>
<td>Power</td>
<td>Second</td>
</tr>
<tr>
<td>U2&amp;U11</td>
<td>D-</td>
<td>USB 2.0 Differential pair</td>
<td>Third</td>
</tr>
<tr>
<td>U3&amp;U12</td>
<td>D+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U4&amp;U13</td>
<td>GND</td>
<td>Ground for power return</td>
<td>Second</td>
</tr>
<tr>
<td>U5&amp;U14</td>
<td>StdA_SSRX-</td>
<td>Super speed receiver differential pair</td>
<td></td>
</tr>
<tr>
<td>U6&amp;U15</td>
<td>StdA_SSRX+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U7&amp;U16</td>
<td>GND_DRAIN</td>
<td>Ground for Signal return</td>
<td>Last</td>
</tr>
<tr>
<td>U8&amp;U17</td>
<td>StdA_SSTX-</td>
<td>Super speed transmitter differential pair</td>
<td></td>
</tr>
<tr>
<td>U9&amp;U18</td>
<td>StdA_SSTX+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shell</td>
<td>Shield</td>
<td>Connector metal shell</td>
<td>First</td>
</tr>
</tbody>
</table>

**Note:** The PHY Side diagram and the table reference each other, with the signals connected in a way that reflects their mating sequence.
12. ELECTRICAL CHARACTERISTICS @25°C

<table>
<thead>
<tr>
<th>Emitting Color</th>
<th>λp (nm)</th>
<th>Vf @If=20mA</th>
<th>Ir @Vr=5V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>570</td>
<td>1.7 ~2.6 V</td>
<td>10µA max.</td>
</tr>
<tr>
<td>Yellow</td>
<td>588</td>
<td>1.7 ~2.6 V</td>
<td>10µA max.</td>
</tr>
</tbody>
</table>

CT R
TRD1+ R2
TRD1- R3
TRD2+ R4
TRD2- R5
TRD3+ R6
TRD3- R7
TRD4+ R8
TRD4- R9
NC R10

Cable Side
(RJ45 Output)

C1 TRP1+
C2 TRP1-
C3 TRP2+
C4 TRP2-
C5 TRP3+
C6 TRP3-
C7 TRP4+
C8 TRP4-

2KV 1000pF
Shield

PHY Side
(Input)

C1 TRP1+
C2 TRP1-
C3 TRP2+
C4 TRP2-
C5 TRP3+
C6 TRP3-
C7 TRP4+
C8 TRP4-

75Ω

C1 TRP1+
C2 TRP1-
C3 TRP2+
C4 TRP2-
C5 TRP3+
C6 TRP3-
C7 TRP4+
C8 TRP4-

2KV 1000pF
Shield

U. D. Electronic Corp.
Transmitter filter & Receiver filter

Type: Balance low pass 100Ω impedance

Insertion loss:

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Insertion loss (dB)</th>
<th>Impedance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-400</td>
<td>-2.0 (-1.4 TYP) max.</td>
<td></td>
</tr>
</tbody>
</table>

Return loss:

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Return loss (dB)</th>
<th>Impedance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1MHz</td>
<td>-20 Min.</td>
<td>load 100Ω</td>
</tr>
<tr>
<td>100MHz</td>
<td>-20 Min.</td>
<td>load 100Ω</td>
</tr>
<tr>
<td>200MHz</td>
<td>-18 Min.</td>
<td>load 100Ω</td>
</tr>
<tr>
<td>300MHz</td>
<td>-15 Min.</td>
<td>load 100Ω</td>
</tr>
<tr>
<td>400MHz</td>
<td>-10 Min.</td>
<td>load 100Ω</td>
</tr>
<tr>
<td>500MHz</td>
<td>-8 Min.</td>
<td>load 100Ω</td>
</tr>
</tbody>
</table>

Reflected CM to Diff Conversion (REF)

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Reflection (dB)</th>
<th>Impedance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50MHz</td>
<td>-30 Min.</td>
<td></td>
</tr>
<tr>
<td>100MHz</td>
<td>-27 Min.</td>
<td></td>
</tr>
<tr>
<td>200MHz</td>
<td>-24 Min.</td>
<td></td>
</tr>
<tr>
<td>300MHz</td>
<td>-22 Min.</td>
<td></td>
</tr>
<tr>
<td>400MHz</td>
<td>-21 Min.</td>
<td></td>
</tr>
<tr>
<td>500MHz</td>
<td>-20 Min.</td>
<td></td>
</tr>
</tbody>
</table>

Reflected Diff to CM Conversion (REF)

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Reflection (dB)</th>
<th>Impedance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1MHz</td>
<td>-48 Min.</td>
<td></td>
</tr>
<tr>
<td>100MHz</td>
<td>-35 Min.</td>
<td></td>
</tr>
<tr>
<td>400MHz</td>
<td>-24 Min.</td>
<td></td>
</tr>
<tr>
<td>500MHz</td>
<td>-24 Min.</td>
<td></td>
</tr>
</tbody>
</table>

CM to Diff Conversion (REF)

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Reflection (dB)</th>
<th>Impedance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50MHz</td>
<td>-48 Min.</td>
<td></td>
</tr>
<tr>
<td>100MHz</td>
<td>-42 Min.</td>
<td></td>
</tr>
<tr>
<td>200MHz</td>
<td>-36 Min.</td>
<td></td>
</tr>
<tr>
<td>300MHz</td>
<td>-33 Min.</td>
<td></td>
</tr>
<tr>
<td>400MHz</td>
<td>-30 Min.</td>
<td></td>
</tr>
<tr>
<td>500MHz</td>
<td>-28 Min.</td>
<td></td>
</tr>
</tbody>
</table>

CM to CM Attenuation (REF)

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Reflection (dB)</th>
<th>Impedance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1MHz</td>
<td>-22 Min.</td>
<td></td>
</tr>
<tr>
<td>500MHz</td>
<td>-20 Min.</td>
<td></td>
</tr>
<tr>
<td>800MHz</td>
<td>-20 Min.</td>
<td></td>
</tr>
<tr>
<td>1000MHz</td>
<td>-17 Min.</td>
<td></td>
</tr>
</tbody>
</table>
Cross Talk (REF)

- 1MHz -34dB Min.
- 350MHz -23dB Min.
- 500MHz -23dB Min.

Inductance (OCL) @ 25°C, 100kHz, 100mV, 8mA DC BIAS

Input(TRD1+, TRD1-); (TRD2+, TRD2-); (TRD3+, TRD3-); (TRD4+, TRD4-): 160uH Min.

HiPot Test

PHY Side(input) To Cable Side(output): 1500Vac 60s or 2250Vdc 60s
13. WAVE SOLDERING TEMPERATURE PROFILE

Note:
The measuring point for the specified temperature shall be on the soldered part of the lead.

Temperature Decrease: $10^\circ C/\text{sec or more}$

- $100^\circ C$
- $140^\circ C$
- $265\pm 3^\circ C$
- $10\pm 1\text{sec}$
- $40\text{sec}$